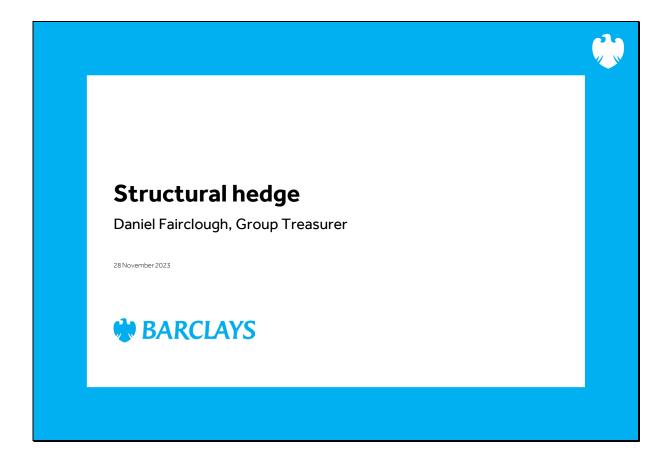


Barclays Structural Hedge Teach-in

Daniel Fairclough, Group Treasurer

Marina Shchukina, Head of Investor Relations



Good afternoon everyone and welcome to this teach-in session on structural hedging.

We know that structural hedging programmes have become a key focus area for the market, so I am delighted to introduce Dan Fairclough, our Group Treasurer, who will explain what Barclays' structural hedge programme is and how it is managed.

Please note all the information presented is either illustrative or existing Barclays' disclosure, but we hope that this will provide helpful conceptual background as well as transparency to this important topic.

Without further ado. I'll hand over to Dan now.



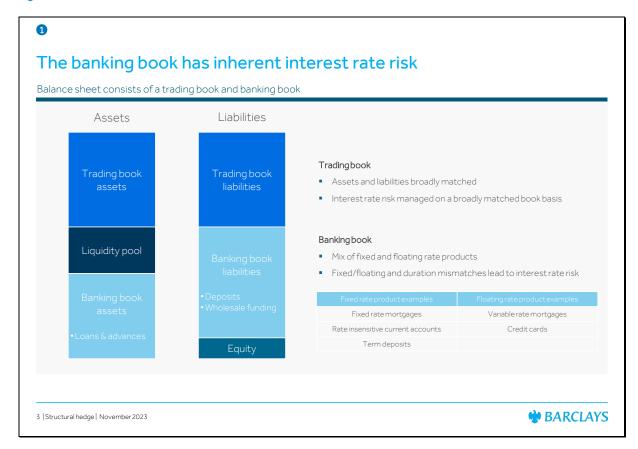
Contents The structural hedge reduces interest rate risk and smooths net interest income over the interest rate cycle 1 Interest rate risk 2 Which products are subject to the structural hedge 3 The purpose of the structural hedge 4 Structural hedge execution 5 Economic, notional and duration considerations

Thank you Marina and good afternoon.

The agenda today is to cover:

- How does interest rate risk arise on a bank's balance sheet?
- Why are some products subject to a structural hedge rather than hedged directly?
- What is the purpose of structural hedging?
- How these hedges are executed?
- What are the factors that drive the income contribution?
- What is the process for determining the size and life of the hedge?
- And I'll conclude with a reminder of our existing disclosure.





Let's begin on slide 3 with a stylised bank balance sheet. We can split the balance sheet into a "trading book" and a "banking book."

The trading book contains broadly matched assets and liabilities that are held with trading intent such as derivatives and repos.

Generally, a set level of interest rate risk will be permitted to trading desks, all governed under a bank's market risk management framework.

The trading book is accounted for at fair value, earnings are recognised as trading income, and any interest rate risk is capitalised under the VaR framework.

Let me turn to the banking book which is the focus for today's presentation.

Banking book assets and liabilities consist of a mix of fixed and floating rate products, with varying durations. Some example products are shown on the slide.

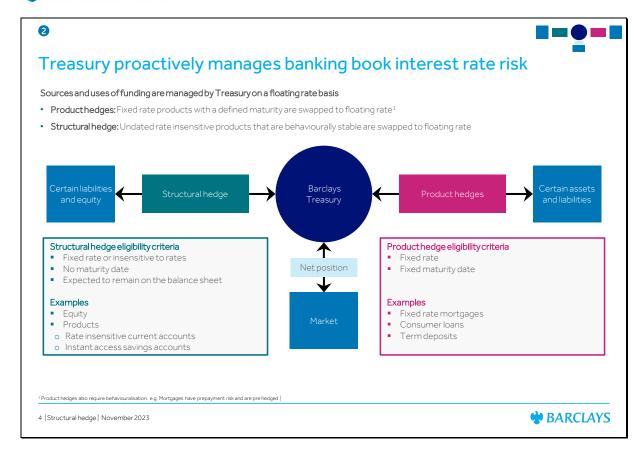
Mismatches between the profile of assets and liabilities create interest rate risk. This whole topic is referred to as "interest rate risk in the banking book" or "IRRBB" as it is snappily known. This is the subject of considerable regulatory interest, particularly post SVB, which at its heart was an interest rate stress first and a liquidity stress second.

The banking book is mostly accounted for at amortised cost, its earnings recognised as net interest income (or NII), and its interest rate risk, net of hedging activity, is generally capitalised in the UK under Pillar 2.

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Turning to slide 4, where we will cover at high level how Barclays Treasury proactively manages banking book interest rate risk

As a broad principle, a bank will seek to manage interest rate risk back to a floating rate.

At Barclays, Treasury performs this role by extracting interest rate risks and undertaking hedging activities centrally, the financial result of which is then passed back to the business.

To do this we refer to two types of hedging programmes, a "product" hedge as shown on the right of the slide, and a "structural" hedge as shown on the left.

Let me cover off the product hedge first – it is relatively simple, and involves products with a fixed rate and fixed maturity date.

Example products include fixed rate mortgages and consumer loans on the asset side, or a fixed rate term deposit on the liability side.

The interest rate risk can be hedged with an interest rate swap, where the receive fixed cash flows from assets or pay fixed flows from liabilities are swapped to floating rate.

This is simple to do given contractual rates and maturities, although additional complexity might arise from product features such as prepayment options. Such risks can then be managed at a portfolio level.

Let me turn to the structural hedge.

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For liabilities to be eligible for structural hedging, they must meet 3 criteria.

- Firstly they are fixed rate, or if not fixed rate, then expected to be insensitive to rates;
- Secondly they have no contractual maturity date;
- Thirdly they are expected to remain on the balance sheet.

Some examples include:

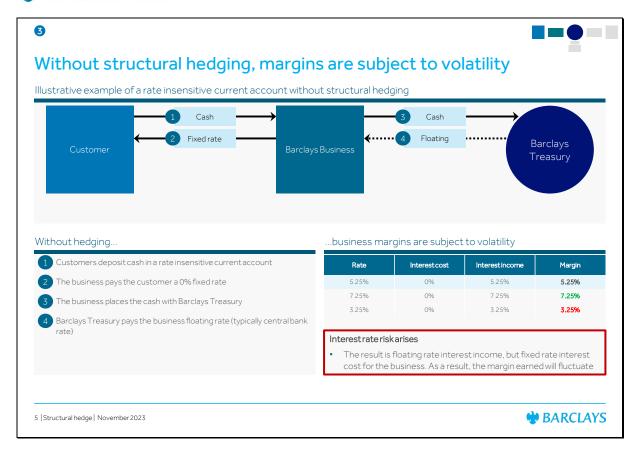
- Equity; and
- Certain products such as;
- Rate insensitive current accounts; and
- A portion of instant access savings accounts.

Interest rate risk on these products is managed on a portfolio approach, based on a view of their tenor or stability – which requires an expectation of customer behaviour. We will go into more detail on structural hedge eligibility in later slides.

To effect the hedge, we use interest rate swaps. These swaps are receive fixed rate, pay floating rate and they produce cash flows that match against pay fixed liabilities we are seeking to hedge and the receive floating assets on the balance sheet, either from customer assets or cash held at central banks in the liquidity pool.

As a consequence they will smooth income through the interest rate cycle and protect NII from a sharp or unexpected fall in rates – more on this to come later.





Let me talk through an illustrative scenario on slide 5, that demonstrates in more detail how interest rate risk arises in a world without hedging. For reference, we've put a diagram map on the top right of the page to show you where we've zoomed in on the diagram from slide 4.

As marked "step 1" on the slide, a customer deposits cash in a rate insensitive current account.

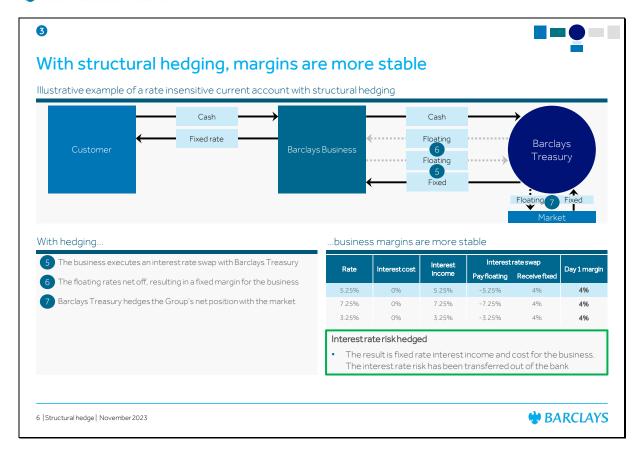
In "step 2", Barclays pays a 0% fixed rate on this account.

In "step 3" the business places the cash with Treasury who in turn places it with the Bank of England at an overnight floating rate.

And finally, in "step 4" Treasury reflects this floating rate income earned back to the business.

Together, the pay fixed and receive float generate an interest rate risk exposure and this exposure will be fully reflected in changes to product margins. As you can see illustrated in the table on the bottom right, this will be positive for financial performance when rates are rising and negative when rates are falling.





Now on slide 6, we show how the picture is changed through structural hedging and set out the resulting stabilisation of margins over time.

In "step 5", as marked on the slide, the business passes the interest rate risk to Treasury and Treasury executes a term receive fixed and pay floating swap.

In "step 6" the floating rate income from the central bank cash and the pay leg on the swap offset, resulting in a fixed rate interest income for the business at that point in time.

The margin remains stable, and will remain there for some time, even as the bank rate moves.

In "step 7" Treasury then hedges the Group's net position across all these portfolios, thus transferring the interest rate risk to the market.

This scenario is stylised, and in reality, there are many businesses with different products and different behavioural profiles.

Some commentators have pointed out that, although the hedge is often referred to as a "tailwind" in that it increases income, when rates are rising it has actually had the effect of dampening income compared to having no hedge in place. This is indeed the case – it is a hedge after all.

The real benefit of the hedge arises when rates are falling (or are stable after a period of rising). Effectively the structural hedge has the effect of partially deferring the benefit of rising rates to later periods when this income is expected to be more valuable.

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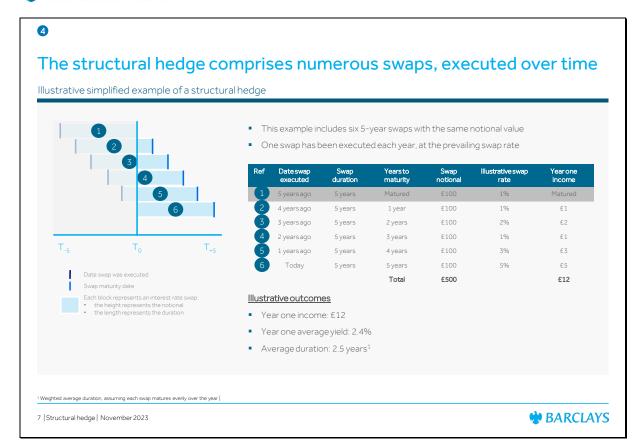
Before I continue, it's also worth a comment on how these hedges are accounted for and capitalised. These receive fixed swaps are entered into a hedge accounting relationship with floating rate assets on the balance sheet (either business loans or balances at central banks). The match of these cash flows means movements are taken to the cash flow hedge reserve and not taken to P&L.

UK regulators use Pillar 2 to assess whether any unhedged risk remains in the banking book and if there is, will require capital to be held against it. For Barclays, this is assessed by using a VaR model to simulate exposures and apply capital to a tail scenario. If the hedge is operated and governed as a hedge then the swaps will be taken into account for this purpose, removing the need to hold as much capital against the banking book exposures.

Another regulatory tool to be aware of is the "Supervisory Outlier Test". This is a set of shocks that banks must apply to their banking books including certain hedges – the net capital at risk in these scenarios is not allowed to exceed 15% of Tier 1 capital.

Both of these regulatory overlays give additional insights into why, in addition to the income smoothing, UK banks hedge in this way. As an aside, the supervisory outlier test is also a reason why an "SVB type" crisis is far less likely in Europe – the exposures involved in that event would have been well beyond regulatory appetite.





The previous example showed a structural hedge at one **point** in time.

In reality, the structural hedge will contain numerous swaps, executed **over** time.

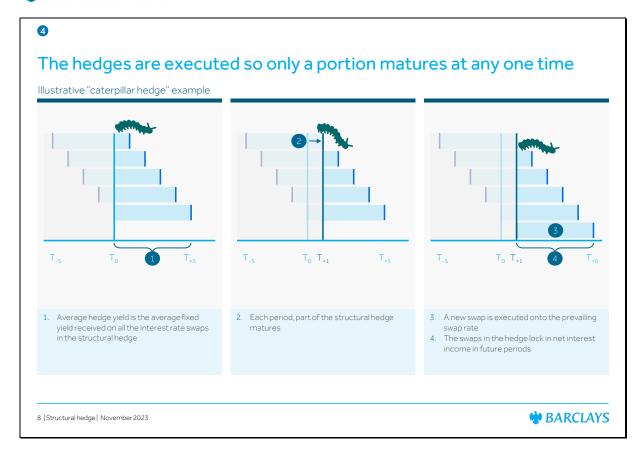
On slide 7, this example structural hedge includes six 5-year swaps, each with a £100 notional value.

One swap has been executed each year, at the prevailing swap rate.

At T-zero on our chart, the annual income in year one generated from this hedge would total £12, resulting in an average yield of 2.4% and an average duration of 2.5 years.

This income is what is referred to as "gross structural hedge" income – the income from the structural hedge.





Turning to slide 8, the structural hedge is often called a "caterpillar hedge".

This is because each month, as shown in step 2, part of the hedge matures.

But in step 3, a new trade is then entered into to maintain the overall duration – this hedge will result in a receive fixed position, contributing to a fixed income with certainty for each of the next periods, T+1, T+2, T+3 and so on.

This causes the hedge profile to 'creep forward' a bit like a caterpillar, I like to think of the most recent receive fix cash flows running through the hedge programme over time like the undulation of a caterpillar.

In the illustrative example, each swap is of the same duration. In practice, each period's maturing swaps may be a combination of different historic duration swaps.

At Barclays, whilst our average duration is 2.5 years and most of our hedging is at a 5 year tenor, we do hedge at a variety of points across the yield curve, including the 3 year and 7 year tenors, again to manage the duration profile of various portfolios.

The maturity of the swaps will be rolled more frequently, for example monthly, creating a very granular reinvestment profile.

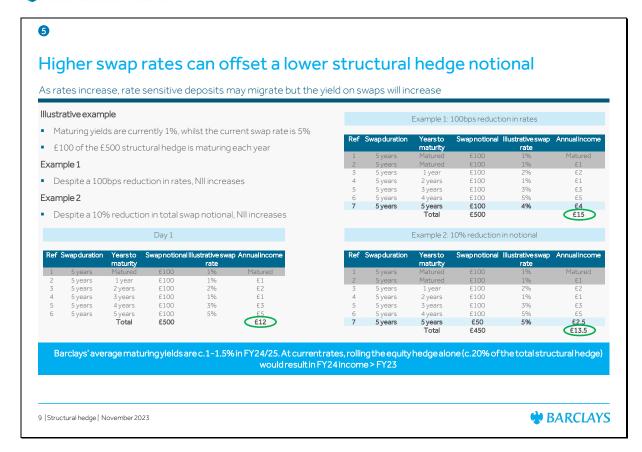
The average maturing yields are therefore a blend of the various duration swaps and the forward hedge yield will be an averaged re-investment rate over time.



In Barclays, these swaps will also be across a number of different currencies reflecting where we have equity and deposit balances and will also be across different legal entities depending upon where the exposures sit, although clearly Sterling is dominant.

The use of swaps enables granular profiling for expected behaviour and provides flexibility to manage balance sheet changes through the monthly roll. This is a key differentiator to many US banks, which more typically structurally hedge through investment in fixed rate securities, which in my mind co-mingles liquidity risk management and interest rate risk management. It can be more difficult to adjust over time for balance sheet changes, and can be less transparent.





On slide 9, this example helps illustrate some of the points we have been making about the momentum nature of the hedge.

Once it gets going on a trajectory, it has some resilience to marginal changes in rates and notionals.

We start with the previous example we provided. From a rates perspective, in example 1 at the top right of the slide, we show that with a 100bps drop in rates, we still see a material increase in income – from £12 to £15.

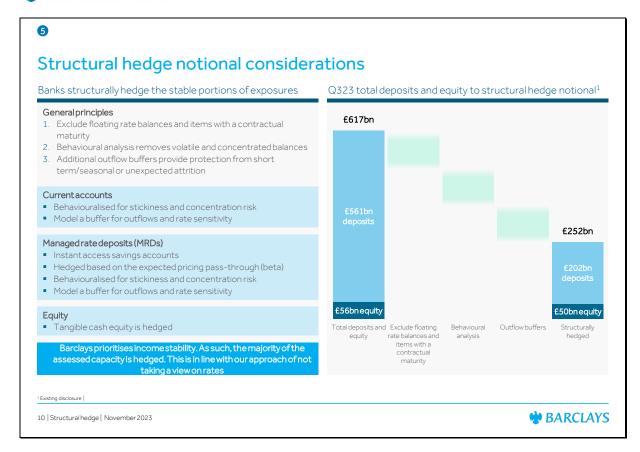
This is because of two factors, firstly the recent year of interest income continues to pay at the higher level and the new rates are still at a materially higher level than the low rates that are maturing.

From a notional perspective, there is also resilience.

In example 2 on the bottom right of the slide, despite a 10% reduction in total notional to £450, NII would still increase over 10%. And even here, NII would be materially higher again in the following year as we would expect to roll the full £100, unless we had a further reduction in the total notional.

From a maturing notional (or hedge roll) perspective, only 20% of the maturing notional would need to be rolled to maintain £12 annual income. As above, if there was stability in the following year the prior trend of increased income would be restored. I will add again that all of this is illustrative, but hopefully it is useful to understand the basic dynamics at play.





Regulators across various jurisdictions provide guidance on interest rate risk in the banking book and what they look for in a structural hedge to ensure it is treated as a hedge for capital purposes.

They generally expect that the hedge should be programmatic and with an objective of income smoothing.

Whilst changes can be made to the hedge, they should be made within a framework, appropriately governed and generally infrequent.

In that context, when building a structural hedge, there are two key considerations that we will briefly touch on:

- The size of the notional hedged; and
- The duration.

Starting with the notional on slide 10.

Banks structurally hedge the stable portions of balances that are expected to remain on the balance sheet. In general, there are three principles underpinning whether a balance is hedgeable or not, these are:

- Firstly we exclude floating rate and contractual balances;
- Secondly we undertake behavioural modelling to remove volatile and concentrated balances. The
 analysis focuses on concentration by customer type, business segment and balance. This
 determines the total hedgeable capacity;



• And finally, additional outflow buffers can be used to provide protection from short term, unexpected or uncertain attrition.

We've also listed out three key products included in the structural hedge:

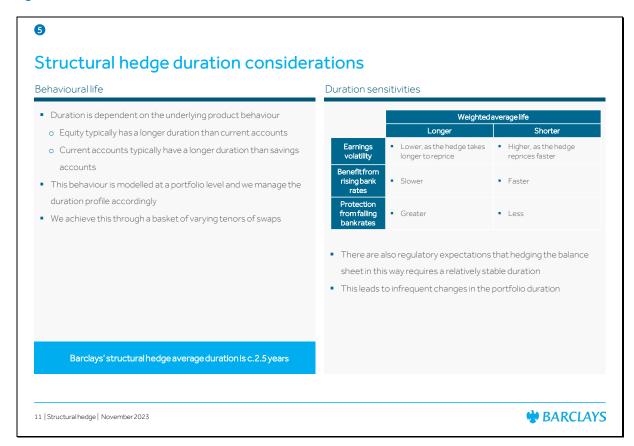
- Firstly, current accounts which follow the principles just mentioned;
- Secondly, managed rate deposits, which are instant access savings accounts, are hedged based on the expected pass-through, meaning that we only hedge the expected fixed rate portion;
- And finally with Equity, only the tangible cash portion is hedged.

As at Q323, Barclays' total deposits and equity was £617bn. After factoring in all the considerations just mentioned, the total structural hedged notional was £252bn.

There has been some discussion about how deposit dynamics might impact the size of the hedge and economic impacts. A consideration is the that the frequent roll of hedges provide an effective lever to adjust hedge size if needed. The size of the UK structural hedges has declined modestly given market deposit dynamics and potentially there is more of this to come.

While there will be an income impact to this, as I noted earlier, there is some resilience built into the hedge at current rates and there is also some symmetry in how the dynamic between rates and balances play out. By this, I mean that if rates decline, we may expect to see less deposit movement. The impact will also depend on where the customer migrates to and whether this is to another deposit type not eligible for structural hedging within the bank or external to the bank.





Turning to the duration of the hedge on slide 11.

The first input into hedge duration is the expected behavioural life of the underlying balance being hedged.

This is determined using historical customer behaviour data and effectively provides an upper bound to hedge life.

Generally stickier deposit types will have a longer tenor, for example current accounts will generally be our longest tenor.

In addition though, we will also consider, within deposit behaviour parameters, accepting that these cannot be perfectly calculated, the optimal duration for the hedge.

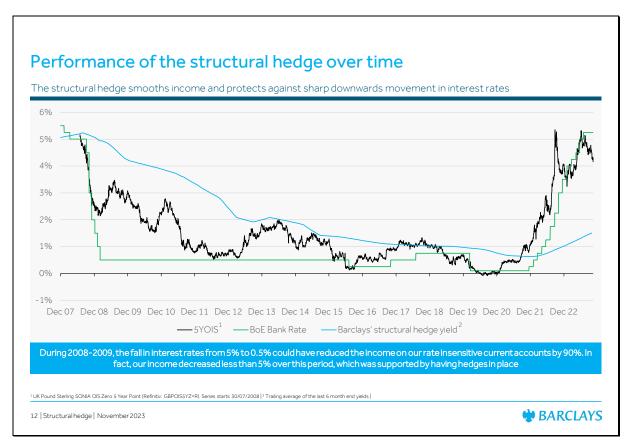
Generally this is within a reasonably tight range as there is a natural trade-off between the level of income protection that the hedge provides and how quickly it will respond to changes in rates.

The hedge duration is evaluated on an ongoing basis to ensure it provides a profile that fits with our product characteristics and provides the best trade-off from an income smoothing perspective.

Generally the shorter the hedge, the more quickly it will re-price at current rates – positive in a rising rate environment.

Barclays' structural hedge average duration is circa. two and a half years and this has ranged between two and a half and three years in recent times.



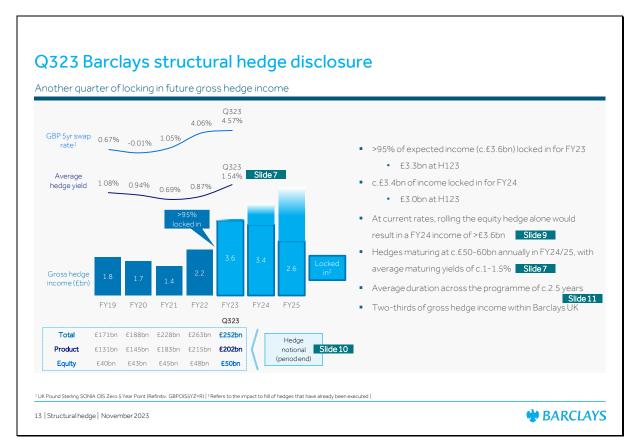


Turning to slide 12, the outcome of all of these actions is that the structural hedge smooths income and protects against sharp downward movements in interest rates.

During 2008-2009, the fall in interest rates from 5% to 0.5% could have reduced the income on our non-interest bearing current accounts by 90% without a structural hedge programme.

In fact, our income decreased less than 5% over this period, which was supported by having hedges in place.





Onto slide 13, we arrive back at the structural hedge disclosure that Barclays provided in Q3, showing:

- The hedge notional;
- Average yield;
- And the gross hedge income since 2019, including the amounts that are locked in for 2024 and 2025 based on hedges we have already executed.

But we hope that this presentation has provided some useful background to this slide.



Summary The structural hedge reduces interest rate risk and smooths net interest income over the interest rate cycle 1 Banks generally seek to hedge balances back to floating rate 2 Structural hedging is undertaken on fixed rate or rate insensitive liabilities that are challenging to product hedge 3 Hedging reduces the income volatility that businesses would otherwise experience 4 The operating of the hedge is a granular set of receive fixed swaps that offset the pay fixed of structural hedge balances and is rolled on an ongoing basis providing a smoothed interest rate profile 5 The hedge effectively defers some of the margin benefit from the recent sharp rise in interest rates to future periods when it will be more valuable We are currently in the upturn portlon of the interest rate cycle, and gross structural hedge income has been growing O323 YTD gross structural hedge income of €2.6bn represented 13% of Group income

Turning finally to slide 14, to summarise our key messages today on the structural hedge.

Firstly, banks generally seek to hedge balances back to floating rate.

Structural hedging is undertaken on fixed rate or rate insensitive balances that are challenging to product hedge as they have no fixed maturity. The largest balances are current accounts, managed rate savings accounts and equity.

Hedging reduces the income volatility that businesses would otherwise experience given mismatches between their assets and liabilities and it also manages capital add-ons that would otherwise apply in Pillar 2.

In practise, the hedge consists of a granular set of receive fixed swaps that offset the pay fixed nature of structural hedge balances. These swaps are rolled on an ongoing basis, providing a smoothed interest rate profile.

We talk about the income from the structural hedge as the gross income given the offset between pay float and floating rate assets and at this point in the cycle, this income growth is relatively robust to changes in rates and balances given its momentum properties.

The hedge effectively defers some of the margin benefit from recent sharp rise in interest rates to future periods when it is expected to be more valuable.

The hedge provided major support to income in 2008-09 as the Bank Rate reduced and the hedge should continue to support Barclays NII going forward.

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Thank you for listening and I hope that you found the presentation helpful.

I will ask the operator in a moment to open up the call for questions.

Before I do, I want to make clear that this event is what it says on the tin... it's an education session on the structural hedge, and so I will be taking questions solely related to this content.

You will, I know, understand that there is no intention here to go beyond the disclosure boundary established at our Q3 results.

Operator, over to you.



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